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1930
PROGRESS

of the

Barberry Eradication Campaign

in

Michigan in 1930

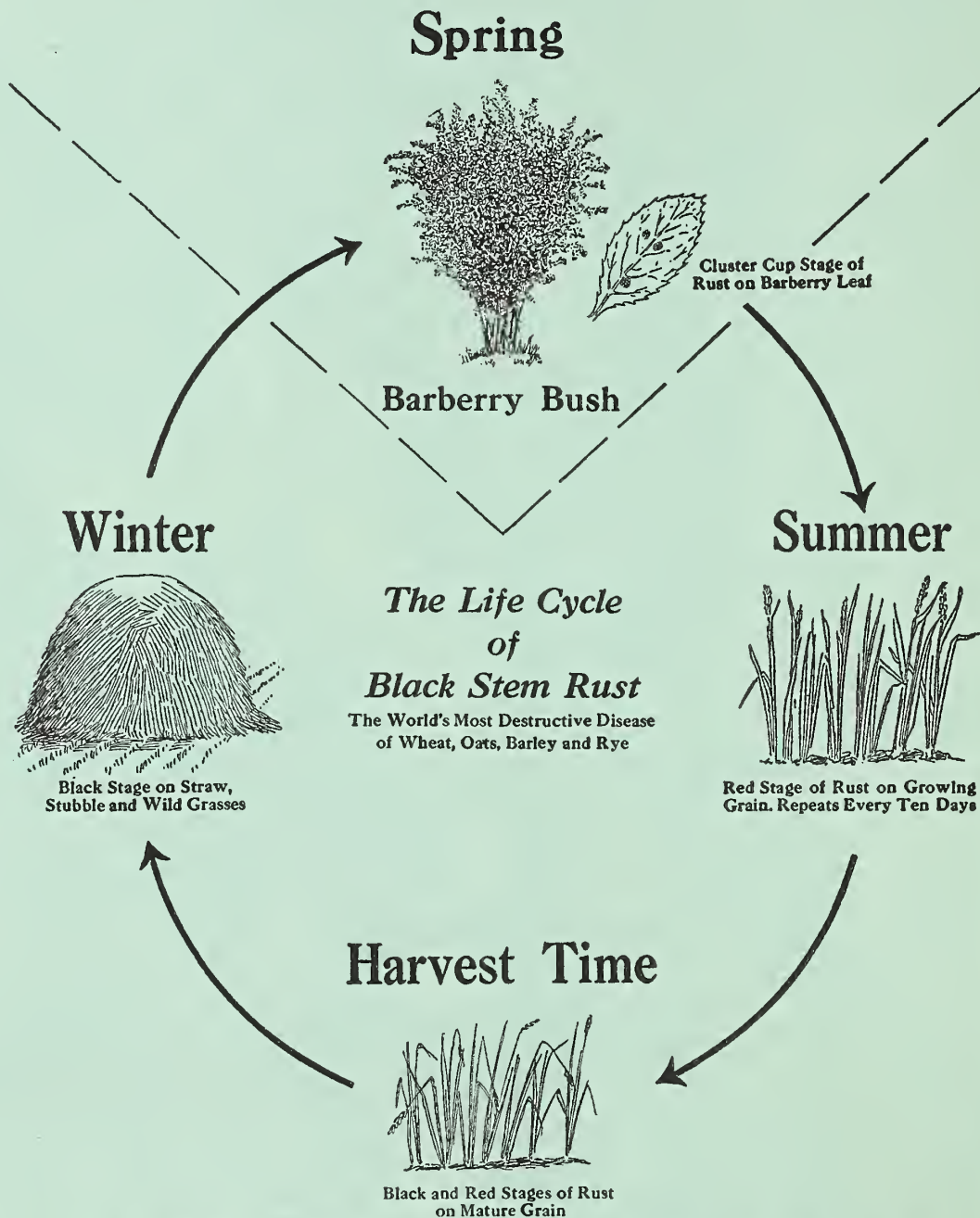
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*Black Stem Rust Spread From This Common Barberry Bush
To Near-by Grain Fields Causing Severe Damage*

Barberry Eradication Pays

Remove the Barberry and Break the Rust Cycle



All Common Barberries act as starting points for Black Stem Rust early each spring. By destroying the barberry the early spring source of black stem rust is eliminated. The Common Barberry provides a means to bridge the gap between the black stage on grain in the fall and the red stage of the rust on grains and grasses the following spring.

BOOST BARBERRY ERADICATION—A PRACTICAL RUST CONTROL MEASURE

PROGRESS OF THE BARBERRY ERADICATION CAMPAIGN

IN MICHIGAN, 1930

By Francis B. Powers,* Agent,

Office of Barberry Eradication, Bureau of Plant Industry

United States Department of Agriculture.

INTRODUCTION

More than five and one-half million common barberry bushes have been eradicated in the State of Michigan since the beginning of the barberry eradication campaign in 1918, according to the records in the Office of Barberry Eradication located at Michigan State College, East Lansing. This is a larger number than has been reported found during the same period in any of the other thirteen North-Central States where the campaign is in progress.

Common barberry bushes were first introduced into Michigan by the early settlers. Favorable conditions in this State for the growing of horticultural products caused an invasion of many nurserymen from the East where common barberry bushes, which came with the colonists from Europe, were flourishing. Previous to 1918 nurserymen sold common barberry bushes and often gave them as premiums with fruit trees. This accounts for many single large bushes that were found in dooryards and orchards. The bush was found to be desirable for making hedge fences, therefore, early in the campaign many large barberry hedges were eradicated. Many of the early homestead sites have been deserted due to the concentration of population in large cities, suspension of the lumber industry, and the location of railroads and highways. Occasionally a hedge of common barberry bushes still is found hidden away on one of these deserted homesteads. Naturally the common barberries which came with the settlers attracted the attention of the feathered inhabitants of the woods. The berries were carried by birds and other animals into jungle-like meshes of grape vines, briars, etc. where seeds were dropped. During the ensuing years the seeds have developed into bushes, some of which are in turn producing seeds.

* Leader of Barberry Eradication in Michigan.

These are some of the reasons why so many large escaped barberry bushes bearing fruit are found in Michigan. These bushes are old enough to be the parents and grandparents of a host of others scattered among the wooded hills, in cedar swamps, and on the sand dunes along Lake Michigan.

A survey was organized to find and destroy the largest number of common barberry bushes in the shortest possible time in order to quickly reduce the number of fruiting bushes. Many barberries were missed in this first hurried search. Originally all bushes were pulled or dug, but because so many of the roots, which were left in the ground by this method, sprouted the use of chemicals as killing agents was introduced. Common salt or kerosene properly applied killed the bushes and prevented all sprouting. New seedling bushes continually spring up, however, and it has been found that seeds often germinate after lying inactive on the ground for years. A constant watch and campaign of eradication must be maintained for some years to come.

These facts have made it essential that adequate educational work be carried on to keep the public informed as to the general characteristics and habits of the common barberry bushes and their relationship to black stem rust of wheat, oats, barley, and rye. It is not possible in an intensive survey to work in more than two or three counties a year, yet in counties worked five or six years ago seedlings have grown into bushes now easily visible.

Men, women, boys, and girls can be of real service to their communities by learning to know common barberry bushes, by looking for them and reporting the location of them to the Office of Barberry Eradication at Michigan State College.

The fact that common barberry bushes spread stem rust to small grain crops has been definitely established. It also has been demonstrated that the eradication of these bushes will decrease the number and severity of stem rust epidemics, thus reducing the average annual loss from this disease. Recent investigations have made it even more necessary to destroy all common barberry bushes, because it is upon the leaves of these bushes that new varieties and strains of stem rust may be produced. These new forms of rust may attack heretofore resistant varieties of small grain. Therefore the production of rust-resistant varieties of small grain will be more successful when all common barberries have been eradicated.

COOPERATION, FINANCE, AND PERSONNEL

The campaign for the eradication of common barberry dushes in the State of Michigan is carried on by the Office of Barberry Eradication, Bureau of Plant Industry, United States Department of Agriculture in cooperation with the Michigan State Department of Agriculture, and Michigan State College. A resident leader and a stenographer-clerk are employed full time on the Federal pay roll.

During the field survey season this year an assistant leader and five squads of six-men each were used. The maintenance of one squad covering a period of about two months in early spring and late fall was made possible by an appropriation through the State Department of Agriculture. This department also provided money for the expenses of a collaborator in publicity work, used jointly by the Barberry Eradication and the White Pine Blister Rust Offices in Michigan.

In addition to the financial aid the State Department of Agriculture has cooperated by furnishing space and transportation for fair demonstration material, and through the Nursery Inspection Service has aided by reporting barberry locations and by enforcing the State law.

Michigan State College at East Lansing has provided office, storage, and greenhouse accommodations in the Botany Building. The staff of the Botany Department has been generous with its time and advice when needed.

The Extension Service has included stories concerning the barberry and stem rust in rural newspaper publicity and has made a place for this subject in their programs of 4-H Club work, farmers' day gatherings, and county agent meetings.

College, high school, Smith-Hughes, and rural school teachers have used educational material concerning barberry eradication and have welcomed speakers interested in the campaign against the common barberry.

The Conference for the Prevention of Grain Rust, composed of business and agricultural leaders interested in rust prevention, has cooperated with all of the States in the barberry eradication

area by supplying publicity and educational material, by organizing the National Rust Busters Club among boys and girls, and in general by aiding the work in every possible way.

SURVEY AND ERADICATION

Most of the field survey work in Michigan during 1930 was carried on in the lower peninsula, in Leelanau and Presque Isle Counties. A total of 158,371 barberry bushes not including seedlings has been destroyed in Leelanau County alone, and of this number 133,984 bushes had escaped from cultivation. The work in Leelanau County has been in progress during the past three years. It has been slow due to the many wooded hills and valleys which had to be carefully covered. A small area in Schoolcraft and Luce Counties of the upper peninsula was surveyed for the purpose of eradicating bushes undoubtedly responsible for frequent occurrence of rust spreads in that region.

Some survey work was done by a squad in the sand dune areas of Allegan County this spring before conditions resulting from melting snow allowed work to commence elsewhere. Late this fall a squad carried on some resurvey work in Wexford County where barberry infested areas were known to exist and also finished an area started this spring in Allegan County.

The total number of common barberry bushes eradicated this summer in Michigan is as follows: Allegan County 812; Leelanau County 6,845; Presque Isle County 392; Wexford County 335; and Schoolcraft County 20.

STEM RUST STUDIES

Weekly observations of rust conditions were made by the squad leaders in Allegan, Leelanau, and Presque Isle Counties. Observations also were made by the Leader, assistant leader, and by the publicity agent in other parts of the State. Samples of rusted grain were collected for the purpose of gaining more information on the varieties and strains of stem rust present in Michigan this year.

Black Stem Rust

spreads from Common Barberry Bushes
to Wheat, Oats, Barley, Rye and many
Grasses



Black stem rust of small grains is caused by a tiny parasitic plant. In the Northern States it lives for a time each spring on the leaves of common barberry bushes. The dust-like spores of the rust are spread by the wind for miles from barberry bushes to grain fields and from one grain field to another. Warm, moist weather aids the rapid development and spread of stem rust, just as the growth of corn, wheat, or other crops is affected by favorable weather conditions. Destroy common barberry bushes and reduce losses from stem rust.

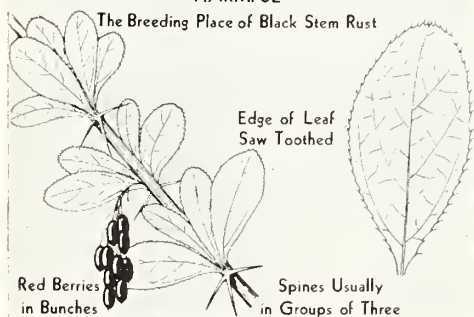
Learn to Know Common Barberry



COMMON BARBERRY

HARMFUL

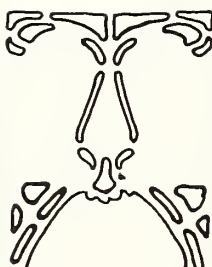
The Breeding Place of Black Stem Rust



Red Berries
in Bunches

Edge of Leaf
Saw Toothed

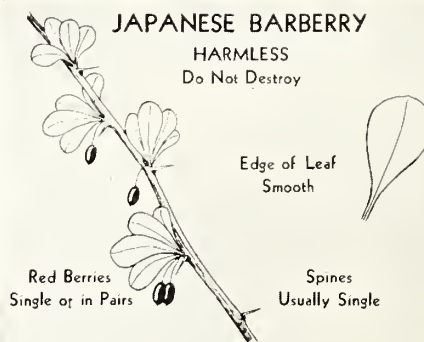
Spines Usually
in Groups of Three



JAPANESE BARBERRY

HARMLESS

Do Not Destroy



Red Berries
Single or in Pairs

Edge of Leaf
Smooth

Spines
Usually Single

Report common barberry bushes you may find, to the Barberry Eradication Office in your State, your Agricultural College, your State Department of Agriculture, or the Barberry Eradication Office, United States Department of Agriculture, Washington, D.C.

The extent of spreads of stem rust from common barberry bushes also was determined by observations. Several large barberry bushes which showed infection early in the summer were found on a hill towering above the house tops in Onaway, Presque Isle County. Wheat was severely rusted on the plains north and west of this location for a distance of five miles. A report of rust in Schoolcraft County in the upper peninsula caused an investigation which revealed the presence of barberry bushes.

An estimated percentage of loss due to black stem rust in Michigan this year is as follows: rye 0%, wheat 1%, barley .5% and oats .7%. Undoubtedly a larger loss resulted from drought than from rust this year.

OTHER INVESTIGATIONS

The plots set aside in Leelanau and Antrim Counties in 1926 and 1927 to ascertain the effect of (1) sunshine and shade, and (2) well-drained and poorly-drained land, on the germination of barberry seeds and the development of seedlings, seem to indicate that these factors are of little consequence. Barberry seeds seem resistant to dryness, heat, and cold and may exist on the ground several years without germinating. New seedlings have been found in some of the drained plots each year since the berries were planted. A few survive but many die before the next year. Seedlings have been found even where the ground was scarified with a torch. Neither scratching the ground with a rake nor tamping it down solidly seemed to hinder some seeds from germinating.

In 1930 investigations found many of the experimental plots in Antrim County destroyed. Those in Leelanau County still persist except for natural strangulation by grass and leaves.

EDUCATIONAL ACTIVITIES

The eradication of every barberry bush in Michigan has proved to be a large, but not impossible task. It is one that involves to some extent every person, both young and old in the entire State. The success of a campaign in which so many people are concerned depends to a large extent upon the active cooperation received from them. The educational phase of the work is designed to secure more active interest and help from the various organizations and from the general public.

Newspapers and farm magazines have given generous support in the educational program. Demonstrations have been placed at county and State fairs, and at other meetings. Talks have been given before numerous adult and juvenile organizations and groups. The educational institutions from the grade schools to the colleges and universities have aided in teaching about the barberry and stem rust in their classes.

During the year 1930 the rural communities were reached by general news items supplied by the Barberry Eradication Office through the Publicity Department of the Extension Service, Michigan State College. Twenty-four news items, giving reports of the progress of the work in the vicinity, were published in communities being surveyed. These were written by the publicity agent employed jointly by the Barberry Eradication and the Blister Rust Offices.

Two State Fairs, one at Detroit and one in the upper peninsula, and two of the largest county fairs were provided with demonstrations. At these fairs approximately 58,500 persons observed the demonstrations and 1,525 interviews were held with people interested in the work. Groups of boys and girls touring the State exhibits were given lectures on the subject of stem rust control. Four reports of barberry locations were received from visitors.

Demonstrations and lectures were given at three sectional camps and at eight county camps, picnics, and special groups of 4-H Club boys and girls. In these groups a total of 1,600 boys and girls heard the story of the relation of common barberry to black stem rust.

SURVEY PLANS FOR 1931

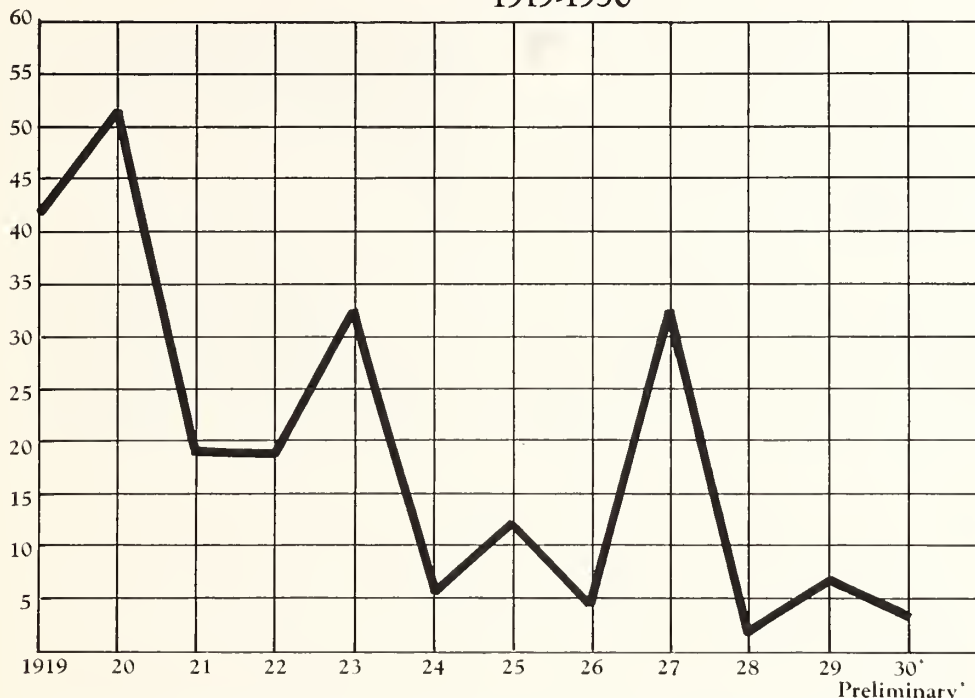
The first survey in the lower peninsula was completed this year. However, the southern tier of counties in the lower peninsula was surveyed early in the campaign before the intensive method of survey was adopted. Sufficient time has elapsed since the first survey to permit seedlings to grow into fruiting bushes. It is imperative therefore that an intensive survey be started in the near future in these southern grain-growing counties.

The upper peninsula has yet to receive a first survey. The country for the most part is covered by forests which are broken by

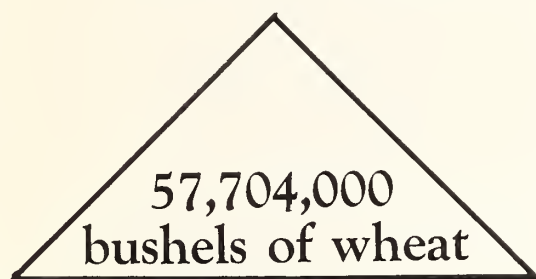
Barberry Eradication Pays

In Millions
of Bushels

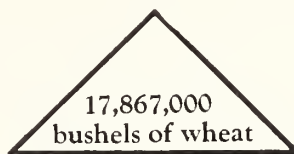
Wheat losses in Barberry Eradication Area
1919-1930



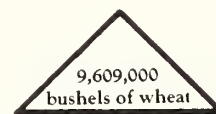
The losses to small grain crops caused by black stem rust have been reduced since the beginning of the barberry eradication campaign in 1918. The breeding of rust-resistant varieties, the use of early maturing varieties, and the sowing of crops early, have aided in this reduction.



Average annual loss
five-year period
1916-1920



Average annual loss
five-year period
1921-1925



Average annual loss
five-year period
1926-1930

Millions of bushels of oats, barley and rye also are
damaged each year by black stem rust

Rust shriveled grain always is discounted

Destroy all Common Barberries—Reduce Losses from Stem Rust.
Receive the Highest Available Price for Grain.

COMMON SALT KILLS BARBERRY BUSHES AND PREVENTS SPROUTING



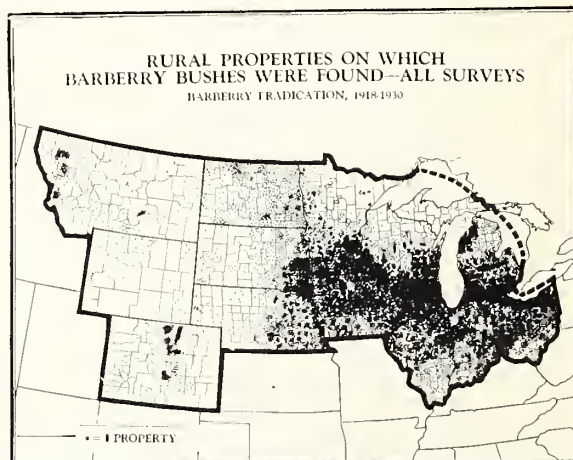
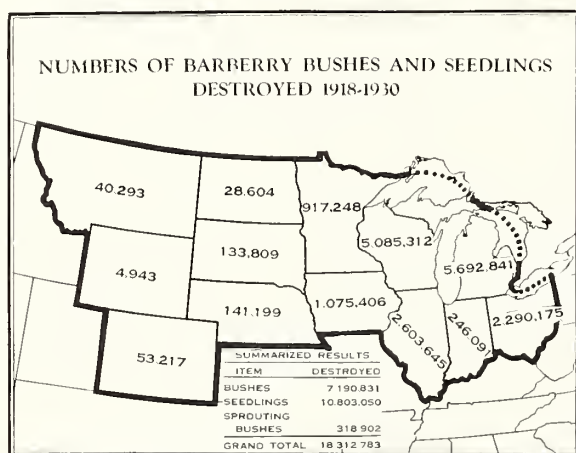
SALTING A BUSH



SPROUTS FROM DUG BUSH

Birds, animals and man chiefly are responsible for the wide distribution of the seeds of common barberries. Every fence row, thicket, pasture or wood is a possible hiding place for these bushes.

Every man, woman and child should consider it his or her duty to look for and report common barberry bushes.



More than 18 million sources of black stem rust
were removed 1918-30

Prepared by the Rust Prevention Association, 300 Lewis Building, Minneapolis, Minn., in co-operation with Bureau of Plant Industry, U. S. Department of Agriculture, Washington, D.C.

a few agricultural areas. We have had numerous complaints of rust from these areas. An investigation of one of them this year uncovered twenty common barberry bushes. It seems necessary that the agricultural areas of the upper peninsula receive attention. Therefore it is planned to carry on a semi-intensive survey in some of these regions in 1931.

CONCLUSIONS

It is fortunate for the grain growers in Michigan that barberry eradication was started 13 years ago. Every year the number of barberry bushes was rapidly increasing due to seeds that had been disseminated from the mother bushes. To date more than five and one-half million barberries have been eradicated in this State and undoubtedly many more remain to be found and destroyed. One easily can imagine what the situation would have been in the near future if these five and one-half million bushes had not been destroyed. The growing of small grain soon would have been an unprofitable if not impossible task.

Losses from stem rust have shown a material reduction since the beginning of the campaign. This is readily seen when such losses in the three 5-year periods between 1915 and 1929 are compared. The estimated average annual loss for the first 5-year period (1915-1919) was more than 50 million bushels of wheat alone in the 13 North-Central States; that for the second period (1920-1924) was approximately 25 million bushels; while that for the third period (1925-1929) was only a little more than 11 million bushels. Other control measures for stem rust also have aided in this reduction.

The job of eradicating barberries in Michigan is far from completed. It will take years before the last barberry bush is found and destroyed. In the meantime some loss from stem rust may be experienced when weather conditions are decidedly favorable for the development of rust.

The work will be completed much sooner with active support from farm and business organizations within the State, and from the public in general. Learn to recognize common barberry bushes, look for them in your community, and report them to the Office of Barberry Eradication, Michigan State College, East Lansing.

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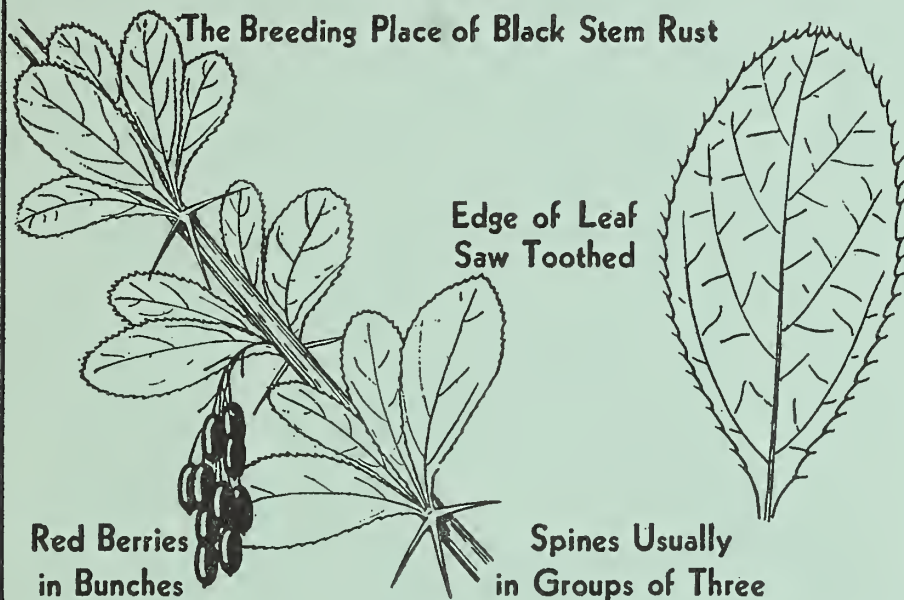
{ FARMS HAVING
 BARBERRY BUSHES
 { TOWNS HAVING
 BARBERRY BUSHES

Common Barberry Spreads Black Stem Rust

COMMON BARBERRY

HARMFUL

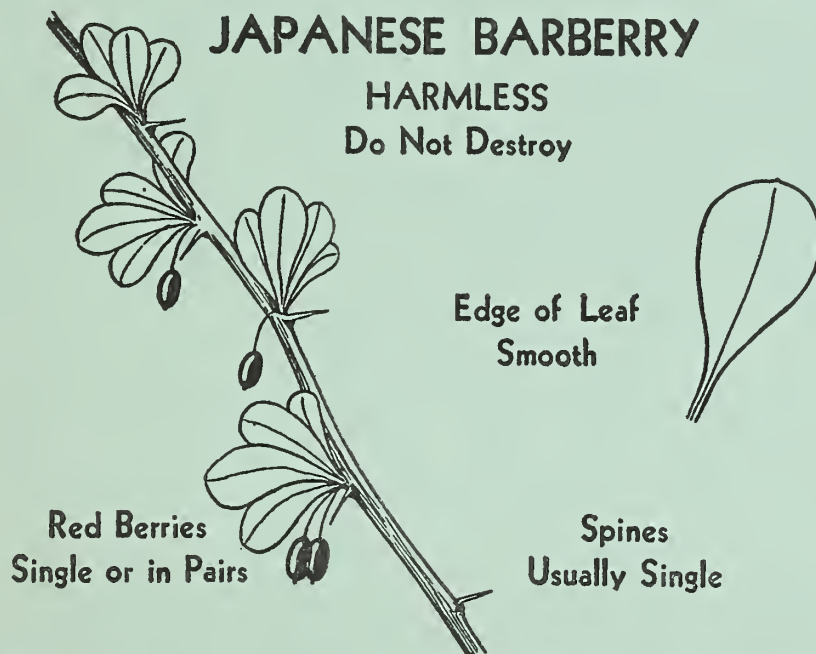
The Breeding Place of Black Stem Rust



JAPANESE BARBERRY

HARMLESS

Do Not Destroy



Look For and Report All Common Barberry Bushes
To the State Leader of Barberry Eradication, in care of your State Department of Agriculture or your State Agricultural College.

Common Barberry Bushes

spread

Black Stem Rust

to

WHEAT, OATS,
BARLEY, RYE,
and Many Wild
Grasses

THIS Progress Report is prepared and printed by the Bureau of Plant Industry, U. S. Department of Agriculture, Washington, D. C. The cover is furnished by the Conference for the Prevention of Grain Rust, 300 Lewis Building, Minneapolis, Minnesota.